

AMERICAN SOCIETY FOR TESTING MATERIALS BULLETIN

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Diversified Program Features 1935 Meeting

Sessions Featured by Outstanding Papers and Reports; Many Participate in Entertainment Features Arranged by Detroit Committee

THE combination of a well-diversified technical program with many outstanding technical papers and reports and the intensive efforts of the Detroit Committee on Arrangements in planning for the meeting resulted in a 1935 annual meeting that in many ways has been unsurpassed by any of those yet held. At the various committee meetings and during the sessions a large volume of work in the materials' standardization and research fields was accomplished. The formal sessions and the several round-table conferences and numerous committee meetings were well attended and much enthusiasm was noted in planning future programs of work.

At the fifteen formal sessions held at the meeting 49 technical papers were presented and 44 committees presented reports. A large number of these items were preprinted in advance and distributed to the members. The records show that the preprinted material aggregated about 1065 pages. The table given at the bottom of page 4 gives the number of newly proposed standards which were approved for publication as tentative, the existing tentative standards which were approved for submission to the Society, etc. (For list of new tentative standards, see p. 15.) It will be noted that 47 new standards were approved at the meeting, this figure comparing with 32 for the 1934 meeting. The large number this year is an indication of the increased intensity of A.S.T.M. standardization work.

The total registration for the week reached 1012, classified as 621 members, 287 committee members representing company memberships and 104 visitors. It is estimated that at least 1200 came to the meeting during the five days. This meeting on the basis of formal registration ranks third, being exceeded by the 1931 meeting in Chicago, and the 1930 meeting in Atlantic City.

A number of the members' families accompanied them to the meeting and 124 ladies were registered.

Work of Detroit Committee

Too much credit cannot be given to the Detroit Committee on Arrangements for its fine work in arranging for the meeting and the very creditable way in which the details were handled

while the meeting was in progress. Throughout the week the various events scheduled, plant visits, the annual dinner, the golf tournament, various ladies' entertainment features, etc., went off "without a hitch."

A large number of members took advantage of their visit to Detroit to inspect manufacturing plants and establishments located there. Several of the companies provided convenient bus transportation for members and arranged to have competent guides accompany the members on their trips.

NEW PRESIDENT



H. S. VASSAR

The annual dinner held on Wednesday evening was a notable event. The music was furnished by the Ford Dixie Eight and the dinner was followed by the discussion on housing, of which mention is made later.

The Eighteenth Annual Golf Tournament was held at the Grosse Isle Golf and Country Club. Prof. William Dunagan turned in the lowest gross score just nosing out H. G. Farmer and thus won possession for a year of the A.S.T.M. championship cup. H. V. Churchill was winner of the prize for low net score and the other prize winners included J. G. Bragg, H. M. Sharp, H. R. Brown, H. G. Farmer, F. M. Hardy and D. K. Crampton.

A number of interesting entertainment features were arranged for the ladies by the Detroit Ladies Committee, including trips to Cranbrook Educational Group, Greenfield Village, Detroit Yacht Club, and other events. Many of the visiting ladies commented on the very fine program which had been arranged for them.

A number of the companies and members in the Detroit area contributed to the funds raised by the committee to provide for the entertainment features and other meeting events.

The personnel of the Detroit Committee on Arrangements was as follows:

F. O. Clements, *Honorary Chairman*

A. E. White, *Chairman*

C. F. Hirshfeld

F. N. Menefee

F. M. Zeder

Entertainment Committee

F. P. Zimmerli, *Chairman*

Program Committee

T. A. Boyd, *Chairman*



Finance Committee
W. C. DuComb, *Chairman*

Exhibit Committee
C. H. Fellows, *Chairman*
P. J. Baker
A. L. Boegehold
G. G. Brown
H. R. Browne
S. M. Cadwell
G. E. Conde
Sabin Crocker
L. A. Danse
C. F. Gilchrist

Publicity Committee
Frank Burton, *Chairman*

Membership Committee
Earl Bartholomew, *Chairman*

W. H. Graves
E. J. Hergenroether
C. S. Kegerries
Herman E. Mayrose
W. E. McCullough
J. L. McCloud
C. H. Morrison
H. C. Mougey
W. W. Nichols
Ralph W. Perry
R. A. Plumb
W. P. Putnam
A. Wallick
L. E. Williams
H. R. Wolf
W. P. Woodside
E. W. Upham
J. M. Watson
A. H. White

Ladies Committee

Mrs. F. O. Clements, *Chairman*
Mrs. L. E. Williams, *Vice-Chairman*
Mrs. T. A. Boyd
Mrs. A. R. Carr
Mrs. W. H. Graves
Mrs. J. H. Hunt
Mrs. J. L. McCloud
Mrs. C. R. Thompson

Edgar Marburg Lecture

Dr. L. B. Tuckerman, National Bureau of Standards, Washington, in delivering the tenth Edgar Marburg Lecture, on Aircraft: Materials and Testing, described the relation between the mechanical properties of the material and the design of struts, beams, etc., and the craft as a whole, to produce light-weight construction. He stated that theoretical and experimental investigation all show that light-weight construction depends on spreading the material as far as possible out from the axis of the elements, hence we have thin-walled construction, that is, thin webs and flanges, thin-walled tubes, etc.

The significant properties, density, strength-density ratio and modulus density-ratio of selected materials were compared. The comparison shows, that from these purely structural considerations, with the materials now available, there is little choice between the three types of construction now in use, wood, light aluminum alloys and high-strength alloy steels. The choice between them must be based on other considerations, ease of fabrication, resistance to deterioration by weathering, etc., and finally upon knowledge of the designs which will utilize best the possibilities of the material.

President's Address

In the annual President's Address, the retiring President, Dr. Hermann von Schrenk, pointed out two broad steps which he believes may increase the value and utility of A.S.T.M. work. Practically every meeting is featured by a symposium on one or more important engineering materials subjects—collections of papers by individual experts on a particular subject or material. Doctor von Schrenk would like to see this method of presenting valuable help and data to the engineer extended so that symposiums would not only bring together experts on different materials, but also that committees participate more directly in these. This should result in a closer tying together of results of diverse investigations.

His second major point in brief is to have committees give, where feasible, information with respect to specifications concerning permissible and proper uses; in this way indicating to the user: first, what A.S.T.M. standards exist with reference to various kinds of uses, and second, reasons why

certain A.S.T.M. specifications should be considered for the use of such material. "In other words a closer tying in of the various standards."

The President's Address was given as part of the opening session. In this session H. A. Campbell, Jr., Secretary, Detroit Board of Commerce, spoke on "Where Is Detroit Going?" A most pertinent and interesting paper on "Relation of Specifications to the Engineering Profession" was presented by C. F. Hirshfeld, Chief of Research Dept., The Detroit Edison Co. Since this address should be of interest to all members, it is published in full, beginning on page 7.

A.S.T.M. Dinner—Discussion on Housing

Following the annual dinner held on Wednesday evening, two papers were presented on the subject "The Relationship of Materials to the House of Today and Tomorrow" and the Award of the Dudley Medal was made. The winners of the Medal were C. A. Hogentogler and E. A. Willis of the U. S. Bureau of Public Roads. Their paper which won the award was presented at the 1934 meeting on the subject "Subgrade Soil Testing Methods."

In his address on the Federal Housing Problem, Miles Colean, Director, Low-Cost Housing and Technical Divisions, F.H.A., mentioned the three-fold scope of the efforts to produce an adequate supply of dwellings: (1) better houses, (2) more houses and (3) to provide means for removing and replacing obsolescent houses. Better housing will come from several sources including a more rational and economical use of land, better scientific planning, more efficient use of better materials. The importance of a mortgage system to retire a loan at a rate well within that of property depreciation is essential in assisting in the removal of obsolete buildings and in new housing work, he stated. The F.H.A. mortgage system is designed to meet this requirement.

J. E. Burchard, Vice-President, Bemis Industries, Inc., who spoke on "The Role of Materials in Modern Housing" indicated his belief that prefabrication will not in itself, even if successful, take us out of the depression. He finds in the new plywoods and the work of the Forest Products Laboratory the rehabilitation of wood as probably the most promising material for the prefabricating industry. He is not enthusiastic as to the use of precast and poured-in-place concrete but finds in the mosaic concrete of Earley and in asbestos-cement sheets as used by McLaughlin's American Houses the probable use of concrete in future for housing (other than foundations) as prefabricated, relatively thin, large sheets of considerable beauty for sheathing and finishing purposes. Mr. Burchard proclaimed the growth of other metals, notably aluminum and copper, relative to steel; he is not impressed by the employment of metal in frame or panel structure and suggested that the role of metals will be vastly increased as interior or exterior finish elements, but not as structure for the house.

Automobile Roads and Rides—Spectrographic Analysis

In addition to the discussion on housing outlined above there were two other sessions especially outstanding. In one

(Continued on page 4)

NEW VICE-PRESIDENT



A. E. WHITE



NEW MEMBERS OF EXECUTIVE COMMITTEE



R. L. HALLETT

W. R. WEBSTER

N. L. MOCHEL

W. H. GRAVES

H. H. MORGAN

New Officers

THE recent election of officers, as announced at the annual meeting, resulted in the unanimous election of H. S. Vassar as President (1935-1936), A. E. White as Vice-President (1935-1937) and the following as members of the Executive Committee (1935-1937): W. H. Graves, R. L. Hallett, N. L. Mochel, H. H. Morgan and W. R. Webster.

President

H. S. Vassar, the new President, is Laboratory Engineer, Public Service Electric and Gas Co., Irvington, N. J. Mr. Vassar graduated from Pratt Institute in 1903. He then was engaged in the engineering and operating departments of the company of whose testing laboratory he is now in charge. He has completed a term as Vice-President of A.S.T.M. and is active in the work of A.S.T.M. Committee D-9 on Electrical Insulating Materials (chairman, 1926-1930) and Committee D-11 on Rubber Products. Mr. Vassar has been a member of A.S.T.M. since 1915, is a member of the A.I.E.E. and active in the work of other organizations.

Vice-President

A. E. White, newly elected Vice-President, is Professor of Metallurgical Engineering, and Director, Department of Engineering Research, University of Michigan. Following his graduation from Brown University, 1907, and a year of study at Harvard, 1908, he was in charge of research on blast-furnace by-products, ores, etc., for Jones & Laughlin Steel Co. In 1911 he became instructor at the University of Michigan, assistant professor 1913-1917. He has held his present positions since 1919. From 1917 to 1919 he was head of the metallurgical inspection division, Ordnance Department of the U. S. Army. He was the first president of the American Society for Metals and is past-chairman of the research committee, A.S.M.E.

Members of Executive Committee

W. H. Graves, who is Chief Metallurgist, Packard Motor Car Co., graduated from the University of Michigan (1919) with the degree of Bachelor of Science in Chemical Engineering. He worked for a time in the chemical laboratory, Continental Motors Corp., and then became affiliated with the Packard Motor Car Co. He has been with this organization since 1919. He is a member of several A.S.T.M. committees and active in the work of other societies, including the S.A.E., A.S.M., and American Chemical Society.

R. L. Hallett, Chemist, National Lead Co., after receiving his E.M. degree from Colorado School of Mines in 1905, was chemist at the Selby Smelting and Lead Co. and Von Schulz & Low, Denver, Colo. He then became chemist and mining engineer of the Consolidated Arizona Smelting Co., and for a number of years has been with the National Lead Co., Brooklyn. Mr. Hallett has been active in A.S.T.M. work for many years and recently headed the special committee in charge of the Symposium on Paint and Paint Materials. He is a member of A.I.M.E., American Chemical Society, and the Mining and Metallurgical Society of America.

N. L. Mochel, Metallurgical Engineer, Westinghouse Electric and Manufacturing Co., was educated in Pittsburgh and was first employed in the Inspection Dept., of the then Westinghouse Machine Co., 1912, later taking charge of the testing of materials. After the merger of that company with the Westinghouse Electric and Manufacturing Co., he continued in this capacity. During the war he served overseas with the Engineer Corps, becoming Master Engineer. He has held his present position since 1920. He is active in many committee projects of the Society and is a member of the A.S.M., A.I.M.E. and the Institute of Metals (England).

H. H. Morgan, Manager of Rail and Track Fastenings Dept., Robert W. Hunt Co., after receiving his M.E. degree from Lewis Institute in 1904 became associated with the Robert W. Hunt Co. He was in charge of the Physical Testing and Cement Testing Laboratories from 1910 to 1917. From 1917 to 1918 he was Washington representative on war materials inspection for the Engineer Corps, U. S. A.; he was appointed Captain, Engineer Corps in 1918. Following this work he was Manager of the Pittsburgh Office of the Hunt Co. and since 1928 has been in his present position. He is a member of the A.S.M.E., A.S.M., A.R.E.A., and A.T.E.A.

W. R. Webster, Chairman of the Board, Bridgeport Brass Co., following graduation from Cornell University in 1890 with the M.E. degree, was associated with Westinghouse, Church, Kerr and Co. In 1892 he was employed by the Aluminum Brass and Bronze Co. and became superintendent (1893) of the Bridgeport Copper Co. In 1897 he became foreman of the rolling mill, Bridgeport Brass Co., and was successively superintendent, raw materials department; general superintendent; vice-president; and chairman of the board, which position he now holds. He has been a member of the A.S.T.M. since 1909. He is also a member of the S.A.E., A.I.M.E., Institute of Metals (England), and is a Fellow of the Royal Society of Arts.



1935 Annual Meeting

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of these there was held a Symposium on the Place of Materials in Automobile Roads and Rides and the other was devoted to a Symposium on Spectrographic Analysis.

In the former three papers were the basis of the discussion—"The Road" by J. S. Worley, Professor of Transportation Engineering, University of Michigan; "Tires and Their Place in Automotive Transportation" by K. D. Smith, Technical Superintendent, Tire Division, The B. F. Goodrich Co.; and "The Car" by O. T. Kreusser, Director, Museum of Science and Industry, formerly Director, General Motors Proving Ground. Mention is made on page 9 that these three papers are to be printed and will be sent to those members who request them, a coupon being provided.

The Symposium on Spectrographic Analysis was sponsored by A.S.T.M. Committee E-2. The symposium had two objects in view, one to give those working in this field definite information as to the methods used by those depending upon spectrographic analysis for the control of quality in a variety of industries; the other to indicate to those not actually engaged in spectrographic work, but interested in the possibility of securing more rapid and reliable methods of testing, the fact that numerous laboratories have found in the spectrograph an invaluable tool that will shorten the time required for analyses and give more complete and definite information as to the composition of materials than can be obtained in any other way. The papers covered work on steel samples, use in the platinum industry, quantitative analysis of magnesium alloys, impurities in cadmium, electrodes for spectrochemical use and quantitative analysis of non-ferrous alloys. In view of the great interest aroused by the symposium, the papers are to be reprinted in pamphlet form.

Committee Reports

It is not possible to indicate all of the interesting and valuable committee reports presented at the meeting. Special mention should be made, however, of the four in which valuable data resulting from very extensive tests in corrosion

were given, namely, Committee A-5 on Corrosion of Iron and Steel, B-3 on Corrosion of Non-Ferrous Metals and Alloys, B-6 on Die-Cast Metals and Alloys and D-14 on Screen Wire Cloth. Extensive reports covering the standardization and research work in their jurisdiction were given by Committees D-1 on Preservative Coatings, D-11 on Rubber Products, D-9 on Electrical Insulating Materials and D-13 on Textile Materials.

For the final results of actions on standards members should study the *Summary of the Proceedings* enclosed with this BULLETIN. Full details of all actions taken, especially where changes in committee reports are to be made, are included in this *Summary*.

DUDLEY MEDALISTS



C. A. HOGENTOGLER



E. A. WILLIS

tration through more uniform tooth contact.

C. H. Gibbons, Baldwin-Southwark Corp., described the effect of cold bending on elastic properties of 3½-in. thick steel plate, pointing out that the stress strain curve did not exhibit a definite yield but stress relieving at 1200 F. restored the normal curve.

In the non-ferrous field, a survey of testing of precious alloys was presented by T. A. Wright, Lucius Pitkin, Inc. Judging from the author's experience and that of his organization in this special field, the order of importance from the point of testing would be gold, silver, platinum and rhodium. The tests to be applied include—again in order of present trade practice—assaying; analysis for formula; studies involving identity, character, thickness and distribution of plate and electroplate; tarnish, corrosion and wear-corrosion; hardness; and ductility, springiness, etc.

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Technical Papers in Metals Field

A number of interesting papers were presented on various topics in the metals field, both ferrous and non-ferrous. Of outstanding interest was the paper on rear axle gears by Messrs. Almen and Boegehold, General Motors Corp., describing series of full size endurance tests on rear axle gears which show that gear tooth failures may be plotted on the familiar S-N diagram. It showed that the Lewis formula for calculating gear tooth stress leads to serious error and that failure in service is due to fatigue failure of the gear teeth under maximum low gear torque. It indicated that alloy steels reduce distortion, thus giving lower stress concentration through more uniform tooth contact.

SUMMARY OF ACTIONS TAKEN AT ANNUAL MEETING AFFECTING STANDARDS AND TENTATIVE STANDARDS

	Existing Tentative Standards Adopted as Standard	Standards in Which Revisions Will Be Adopted	Proposed Standards Approved for Publication as Tentative	Proposed Revisions of Existing Standards Accepted as Tentative	Tentative Standards Revised	Total Standards Adopted	Total Tentative Standards
A. Ferrous Metals—Steel, Cast Iron, Wrought Iron, Alloys, etc.	2	4	13	14	5	114	33
B. Non-Ferrous Metals—Copper, Zinc, Lead, Aluminum, Alloys, etc.	2	1	5	4	1	73	28
C. Cement, Lime, Gypsum, Concrete and Clay Products	6	2	8	5	7	71	55
D. Paints, Petroleum Products, Coal, Textiles, Rubber, etc.	10	10	20	14	33	240	132
E. Miscellaneous Subjects, Testing, etc.	..	..	1	1	..	13	10
Sectional and Research Committees	..	..	..	..	2	1	3
Total	20	17	47	38	48	512	261



Outstanding Exhibit Held in Detroit

Industrial, Research and A.S.T.M. Committee Displays Feature Interesting Exhibit

THE Society's Third Exhibit of Testing Apparatus and Related Equipment held in the Grand Ballroom of The Book-Cadillac during the five days of the annual meeting, June 24-28, was an outstanding one and in the opinion of many proved to be the most interesting one yet held. In all there were 38 displays, completely filling the ballroom. In addition to booths sponsored by companies in the apparatus industry, the displays sponsored by Society committees and by a number of institutional, industrial and research laboratories proved to be one of the high spots of the Exhibit.

The Detroit Committee on Exhibit did a great deal of valuable work in developing the Exhibit, especially in arranging for research displays and much of the credit for the outstanding success of the Exhibit should be attributed to the members of this group:

C. H. Fellows, *Chairman*, The Detroit Edison Co.
J. L. McCloud, Ford Motor Co.
W. E. McCullough, Bohn Aluminum and Brass Corp. (Alternate: C. H. Morrison)
Ralph W. Perry, Perry Testing Laboratory
W. P. Putnam, Detroit Testing Laboratory
H. R. Wolf, General Motors Corp.

One of the surprises the committee had in store for the members was a display of standard test specimens as specified in various A.S.T.M. specifications and tests. Various members of the committee contributed specimens, which were subsequently mounted on six panels forming the sides of a nicely finished cabinet. The cabinet was mounted on a shaft and revolved at a slow speed. The complete equipment has been contributed to the Society by the Detroit Committee on Exhibit as a permanent display.

Through the courtesy of Edison Institute at Dearborn the Exhibit included a special display of the early instruments developed by Thomas A. Edison who was a personal member of the Society from 1916 until his death.

Society Committee Displays

Without doubt one of the features of the Exhibit which proved to be of major interest to A.S.T.M. members and a large number of the visitors were the displays sponsored by six of the Society's standing committees, in which important phases of their work were stressed. A list of the committees,

together with the names of those in charge of the respective displays, appears below. In addition to those in charge a number of other members of the respective committees participated very actively in planning the displays:

Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys: C. L. Hippensteel, W. H. Finkeldey, A. J. Phillips.
Committee B-6 on Die-Cast Metals and Alloys: H. A. Anderson
Committee D-2 on Petroleum Products and Lubricants: L. A. Danse
Committee D-9 on Electrical Insulating Materials: E. J. Rutan
Committee D-15 on Thermometers and Laboratory Glassware: J. J. Moran
Committee E-4 on Metallography: C. J. Tobin

In the Committee B-3 booth there was an instructive display of corroded test specimens used in the extensive series of tests being conducted by the committee, including several panels of atmospheric specimens exposed for periods of one year and three years, specimens immersed in sulfuric acid and other liquids and a large number of galvanic couples exposed at nine test locations in various parts of the country. Large photographs of the test sites were also shown.

One of the outstanding displays in the Exhibit was that sponsored by Committee B-6 on Die-Cast Metals and Alloys. A number of producers represented on the committee cooperated in furnishing display boards on which were mounted a large number of commercial aluminum and zinc die castings made from committee standardized alloys. In addition there were charts of corrosion attack on test specimens representing 22 alloys exposed at ten different locations; corrosion specimens removed after five years' exposure; tensile, impact, corrosion and metallographic and X-ray data on die-casting alloys; slabs of 99.99 per cent pure slab zinc as standardized by the committee, etc.

Committee D-2 on Petroleum Products and Lubricants in one section of its large booth arranged an extensive display of the large number of instruments and apparatus specified in the many A.S.T.M. standard methods of testing petroleum products, as developed by Committee D-2. This apparatus was loaned by various instrument companies participating in the Exhibit. In the other section of the booth were many pieces of unofficial testing apparatus.

In the booth of Committee D-9 on Electrical Insulating Materials there was a display of micrometers showing the



VIEWS OF THE 1935 EXHIBIT



advantages of using types specified in the method of test for Thickness of Solid Electrical Insulation (D 374-34 T); different types of dielectric strength testers for insulating tape and special equipment for power factor measurements.

Committee D-15 on Thermometers and Laboratory Glassware used its booth set-up to stress phases of its work involving the more rational standardization of various types of laboratory glassware and showed currently used types as compared with designs proposed by the committee to give improved accuracy and better dimensional uniformity. A complete set of A.S.T.M. thermometers was shown and a special set of thermometer inspection devices.

Committee E-4 on Metallography had a display of much interest in the metals field including a large number of photographs, plates, curves and specimens illustrating polishing and etching technique, pictures illustrating methods of research and industrial radiography and diffraction studies.

Research Laboratories

Booth displays sponsored by various institutional and industrial research laboratories were of considerable interest and showed special types of instruments and equipment, not available commercially, as used in connection with studies of materials. Bell Telephone Laboratories, Inc., displayed a special low-capacity impact machine which meets requirements of the A.S.T.M. Method D 256 and a bendometer on which will be based a proposed standard being developed by Committee B-4 comprising a test for stiffness and temper of heater and electrical-resistance wire. The Research Dept. of The Detroit Edison Co. showed a special brick testing machine, apparatus for the determination of carbonates in boiler water, a strip power factor cell, a newly developed hydrophil balance and other instruments.

In the display of the Research Division, General Motors Corp., there was a stroboscope crankshaft used for studying oil flow in rapidly moving automobile parts and a photoelastic stress study used in determining distribution of stresses in automobile parts for proper design. The Materials Testing Laboratory of the University of Illinois had two small high-speed fatigue testing machines, one in operation. These showed the special specimens used in the tests. The technical laboratories of Koppers Products Co. demonstrated a special viscosimeter which had been developed to determine consistency of all common grades of bituminous road materials.

Michigan State College had an extensive display of interferometers, optical plates, hot wire anemometer, a 60-in. globe photometer and other special apparatus. The Department of Engineering Research, University of Michigan, exhibited special sound testing equipment, high-speed stroboscope, small drill press dynamometer, demonstration showing special method of spectrographic analysis and other features.

Through the courtesy of the U. S. Bureau of Reclamation, Denver, there were exhibited a strain meter, contraction joint meter and resistance thermometer developed by Prof. R. W. Carlson and representing types used for embedment in mass concrete.

Instrument and Apparatus Companies

The various booths and displays sponsored by leading companies in the instrument and apparatus field contributed largely to the success of the Exhibit, not only through demonstrations and set-ups showing latest available instruments for testing and research work, but also through the explanation of the various apparatus as given by the capable representatives in charge of the booths.

Members who attended previous exhibits found that in the preceding two years there have been a number of remarkable developments in the apparatus field. Not only has there been much new apparatus developed, but many important advances were made in improving the utility of previously existing equipment. As a whole the industrial displays indicated the wide range and types of industrial testing and research instruments available for investigations of materials. A complete list of the products on display was given in the final program distributed at the meeting.

The following companies were represented in the Exhibit:

Baldwin-Southwark Corp.	Instruments Publishing Co.
Bausch & Lomb Optical Co.	Leeds & Northrup Co.
Central Scientific Co.	"Metals & Alloys"
Christian Becker, Inc.	Tinius Olsen Testing Machine Co.
Detroit Testing Machine Co.	The Palmer Co.
Eberbach & Son Co.	Precision Scientific Co.
The Emil Greiner Co.	RCA Manufacturing Co., Inc.
Federal Pneumatic Systems, Inc.	Riehle Testing Machine Division,
J. B. Hayes, Inc.	American Machine & Metals,
Illinois Testing Laboratories, Inc.	Inc.
E. H. Sargent & Co.	
The Shore Instrument and Mfg. Co.	
Steel City Testing Laboratory	
C. J. Tagliabue Mfg. Co.	

Chicago District Committee Reorganizes

At a meeting of the Chicago District Committee late in May, the committee was reorganized in accordance with the Charter for District Committees adopted by the Executive Committee and plans made to carry out some of the activities indicated in the charter.

The following members have been appointed to serve on the committee:

Term expiring in 1936:

H. D. Browne, Engineer of Tests, Chicago & Northwestern Railroad
H. G. Farmer, Technical Service Director, Universal Atlas Cement Co.
F. R. McMillan, Director of Research, Portland Cement Assn.
H. H. Morgan, Manager, Rail and Fastenings Dept., Robert W. Hunt Co.
Frank Randall, Structural Engineer, Chicago, Ill.

Term expiring in 1937:

G. C. D. Lenth, Consulting Engineer and Secretary, Clay Products Assn.
J. de N. Macomb, Assistant to Vice-President, Inland Steel Co.
L. I. Shaw, Development Engineer, Western Electric Co., Inc.
W. A. Straw, Engineer, Western Electric Co., Inc.

Term expiring in 1938:

R. A. Bull, Consultant on Steel Castings, Chicago, Ill.
R. B. Harper, Vice-President, The Peoples Gas Light and Coke Co.
Grant Monk, Assistant Engineer, Department of Metallurgy and Inspection, Illinois Steel Co.
T. H. Rogers, Assistant Director of Research, Standard Oil Co. (Indiana)

At the organization meeting, W. A. Straw was elected chairman, J. de N. Macomb, vice-chairman, and G. C. D. Lenth, secretary. One of the first acts of the committee was to send a special letter to the A.S.T.M. membership in the Chicago District which embraces Cook, Lake, Kane, Dupage and Will counties in Illinois and Lake in Indiana, embracing a 50-mile radius around Chicago, inviting the members to participate in the annual meeting and indicating transportation facilities available. The fine attendance at the meeting from the Chicago area indicates that this effort bore fruit.

The committee is working on plans for a series of joint meetings during the fall and winter seasons and through its program will definitely stimulate interest in Society activities among the A.S.T.M. members in the Chicago District and also have as its aim the widening of membership in the Chicago area.



Relationship of Specifications to the Engineering Profession

Address Presented at 1935 Annual Meeting by C. F. Hirshfeld, Chief of Research Dept., The Detroit Edison Co.

SOME one once defined an engineer as "a person who does things with things." This definition is neither sufficiently inclusive nor properly exclusive, but it does have a certain value for my immediate purpose. It does emphasize the engineer's tremendous and vital concern with "things." It is true that he is equally concerned with people and with energies and with other factors but his work can never be divorced from what may be designated by the homely name "things." These things may be nothing more than sand or clay or a simple piece of metal; or they may be most complicated assemblies, stationary on the earth's surface or moving with gigantic rhythms of their own. In all cases, whether simple or complex, they consist in ultimate analysis of what we call materials.

In one sense, the development of engineering has rested solidly upon the acquisition of knowledge regarding materials. There is probably no other group that uses so many different materials in so many different ways as does the engineer. And the number available to and used by him increases almost day by day.

In all cases a material is used because of certain properties or characteristics; in some cases in spite of some of them. In either event a knowledge of properties and characteristics is absolutely essential to success. The practice of engineering is based upon the choice and use of just those materials adapted to produce the desired technical and economic results.

Families of Materials, Specifications

To the average man potatoes are just potatoes. To the housewife they divide up into certain roughly defined categories such as new and old, large and small, good condition and poor condition, and so on. But the potato specialist, producer or marketer divides them rigidly into groups and sub-groups that are as marvelous to behold as they are difficult for the average man to comprehend.

The same sort of thing holds for the materials that so vitally concern the engineer. To the average man iron is just iron. But the engineer recognizes huge families of irons, of steels and of "alloy" steels. And, if he is to do his job properly he must have at least a speaking acquaintance with many members of all these families; he must know where to find the complete family trees and how to interpret them. Nor is this true for iron and steel only. It holds for all the metals, the ores, the fuels, the earths, the woods, the synthetic products and on through a lengthy list.

There is also another requisite of great importance. It is not only necessary that he shall have available in useable form this extensive information regarding materials but also that he shall be able to define or describe each one of them sufficiently accurately and specifically to enable all concerned to obtain substantially the same mental impression from his words. This is obviously necessary because the engineer predicates his calculations and designs upon certain assumed properties and success depends upon his ability to acquire what he has assumed. The individual supplying the material must therefore know exactly what is wanted and, in the best practice, it must be possible to check in some satisfactory way that which is delivered.

Such description has come to be known as specification. Sometimes I think it would be desirable to point out to each

engineer at least once a year that specification and specific come from the same root and that a specification is valuable only as and to the extent that it is specific. It happens that I have had much to do with specifications and that I have had forced upon me an appreciation of their general lack of specificity.

Sources of Difficulty in Specifying

It is exceedingly easy to criticize such a situation; it is exceedingly difficult to rectify it. The difficulty has its origin in two different sources. One is the inherent difficulty of the problem; the other has to do with the mental and other characteristics of the men concerned. Of these two the former is probably the more important because habits and customs can be built up if sufficient effort is expended.

Let us therefore examine for a minute the inherent difficulty. Many properties or characteristics of importance do not lend themselves readily to accurate and at the same time practical definition. Take for example the specification "straight grain" in the case of wood. I suppose there is no real wood in which the grain is absolutely straight for any great distance and over any great section. If this be true the expression must refer to a limitation with respect of degree of departure from absolute straightness. What degree? Obviously, unless those concerned agree upon an exact definition of this expression in terms of degree of departure it is well nigh meaningless commercially.

Looking deeper, straightness of grain is not of any value except as it affects some property of the wood which is of importance for the purpose intended. Therefore, even a simple agreement on permissible degree of departure from straightness is not of proper technical value unless it is reached in the light of a full knowledge of the effects of such departure and reflects the application of that knowledge.

The engineer must realize always that each item of a technical specification dealing with materials is of value only as it affects the usefulness of the material for a specific purpose. And much of our trouble lies right here. Our application of materials is practically always forging ahead of the sort of knowledge required for technically and commercially satisfactory specification. We picture situations in which we can specify properly. We seldom meet them in fact except when dealing with comparatively simple problems in fields that have been very thoroughly investigated. In such cases agreement has been reached with respect to the properties to be specified, the ways in which they shall be specified and the ways in which and means by which fulfillment of specification shall be checked.

I should like to illustrate the other extreme by a comparatively recent experience. It happens that I have been engaged in a development in which rubber springs were substituted for the more conventional steel springs. This is a comparatively new field of endeavor. We could not find any one who could give us the information required for the design of such rubber springs. Therefore we made a small number of laboratory experiments and then, taking our courage in both hands, we designed and ordered springs. The specification consisted of drawings, showing shape and dimensions, together with a statement that they were to be made of rubber of a certain general type and with a certain degree of hardness.

(Continued on page 12)



BULLETIN

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Number 75

July 31, 1935

Detroit and Local Committee

THE thanks of the entire Society may well be extended to our members in Detroit for making the recent annual meeting the noteworthy success that it was. The Detroit Committee on Arrangements contributed in many ways. It not only took care of the many entertainment features, the expense of which was met through local contributions, but also took a direct part in program arrangements, notably the Opening Session, the Symposium on Roads and Rides, and the Dinner Program on Housing. It also assisted in arranging a most interesting exhibit and in publicizing the meeting in the Detroit area.

The success of the meeting is to be measured not merely in the total recorded attendance, but is demonstrated in many other ways—by the excellent and enthusiastic meetings of committees and the definitely better attendance at the technical sessions.

While the interest of the program itself is of course the primary factor in securing good attendance, nevertheless, having the meeting in an industrial center such as Detroit made it possible for many of the younger men of the local industries to attend these sessions. Also the bringing of the meeting inland contributed to the generally better attendance from the central and western states. The Society needs to make its work better known and to bring it to the attention of industries in general; and this very definitely was accomplished through the recent meeting.

The Detroit Committee functioned under the very able chairmanship of Prof. A. E. White with Dr. F. O. Clements as Honorary Chairman. The effective organization represented in the personnel as set forth on pages 1 and 2 is indeed much to be commended.

President Vassar Asks a Question

STARTING into a new year of the Society's work we are all impelled to greater efforts for the organization by the encouraging report of the Executive Committee as presented at the annual meeting.

Despite the unfavorable conditions of the past several years the Society has gone steadily forward in accomplishment and prestige due in no small measure to the patient and unrelaxing efforts of our standing committees. This has been so regardless of the inroads that economic conditions were making on our membership.

But now, for the first time since 1930, the membership summary in the Executive Committee's report is "out of the red." While this is partly a reflection of business improvement, it largely has been brought about by the united efforts of the Membership Committee, the "Committee of 750," and headquarters staff.

This favorable membership trend must be so strengthened by renewed effort that the year may witness a substantial growth in membership, indicating our complete return to health.

This is far from being a plea for mere numbers. If we are to carry on effectively, and meet the demands of industry for work in new fields, and particularly if undesirable curtailment of publications is to be avoided, additional revenue is essential. This end can be attained best through increased membership.

Experience has proved beyond question that organized effort in this line is successful only when based on *personal contacts by members*. No amount of letter writing or circularization can produce such results as can a loyal and enthusiastic membership.

A vitally important task now confronting us as a Society is the restoration of a healthy rate of growth.

It can be done. Will you help?



President, '35-'36

1935 Year Book Sent on Request

All members of the Society who wish to obtain a copy of the 1935 Year Book (now in preparation) should return promptly the enclosed request card. Copies will be sent only on request.

As customary, the 1935 edition will contain the complete membership list. The committee section, listing the full personnel and officers of all A.S.T.M. standing committees will be included, as well as the By-laws, Regulations Governing Standing Committees, Society representatives, etc.

Discussion of Meeting Papers

Written discussion of the papers and reports presented at the 1935 annual meeting will be received by the Committee on Papers and Publications until September 3. All who plan to submit discussion are urged to send it to Society Headquarters as far in advance of the closing date as possible in order to facilitate the preparation of the material for the *Proceedings*.



BULLETIN
July, 1935

New Committee on Analysis of Metals

A new standing committee, with the title "Committee E-3 on Methods of Chemical Analysis of Metals," was formally organized at a meeting held during the A.S.T.M. annual meeting in Detroit. It would appear that there would be many advantages in consolidating the various standard methods for analyzing metals and that it would likewise be desirable if the standardization work pertaining to chemical methods of testing were in the jurisdiction of one committee.

At the organization meeting, Dr. G. E. F. Lundell, Principal Chemist, National Bureau of Standards, who had served as temporary chairman was elected chairman and H. A. Bright, Chemist, National Bureau of Standards, was chosen secretary. A number of the standing committees both in the ferrous and non-ferrous metals field will have direct representation on the new committee as indicated in the personnel given below.

COMMITTEE E-3 ON CHEMICAL ANALYSIS OF METALS

Aluminum Co. of America, H. V. Churchill (Representing Committee B-6 on Die-Cast Metals and Alloys)
American Brass Co., R. P. Nevers
American Rolling Mill Co., Arba Thomas
Barry, F. M., Scovill Mfg. Co. (Representing Committee B-5 on Copper and Copper Alloys, Cast and Wrought)
Beers, A. D., Illinois Steel Co.
Bell Telephone Laboratories, Inc., B. L. Clarke
Bethlehem Steel Co., W. E. Steiner
Bright, H. A., National Bureau of Standards
Brown, W. J., National Lead Co.
Byers Co., A. M., F. E. Eckert (Representing Committee A-2 on Wrought Iron)
Evans, D. R., Western Electric Co.
Francis, C. B., Carnegie Steel Co. (Representing Committee A-1 on Steel)
Gerhard, M. S., U. S. Navy Yard
Hopkins, G. A., Carnegie Steel Co.
Job, Robert, Milton Hersey Co.
Johnson, C. M., Crucible Steel Co.
Lundell, G. E. F., National Bureau of Standards (Representing Committees A-2 on Wrought Iron, A-3 on Cast Iron and A-9 on Ferro Alloys)
MacKenzie, J. T., American Cast Iron Pipe Co. (Representing Committee A-3 on Cast Iron)
McCune, W. H., American Sheet and Tin Plate Co.
McDonnell, M. E., The Pennsylvania Railroad Co. (Representing Committees A-1 on Steel and A-2 on Wrought Iron)
Midvale Co., F. B. Foley (Representing Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys)
National Smelting Co., J. G. G. Frost
Pittsburgh Testing Laboratory, H. H. Craver
Union Carbide & Carbon Research Laboratories, T. R. Cunningham (Representing Committee B-4 on Electrical-Heating, Electrical-Resistance and Electric-Furnace Alloys)
Western Electric Co., E. C. Frost
Wright, T. A., Lucius Pitkin, Inc. (Representing Committee B-7 on Light Metals and Alloys, Cast and Wrought)

Meeting of Rheology Society

The Seventh Annual Meeting of the Society of Rheology will be held in New York City at the Bell Telephone Laboratories, October 11 and 12. Two symposiums are being planned on the rheological aspects of rubber and plastics. The committee in charge of the plastics symposium is: Dr. E. O. Kraemer, R. D. 2, Marshallton, Del.; and H. A. Wakefield, Bakelite Corp., Bloomfield, N. J. The rubber symposium is being developed by Dr. Melvin Mooney, U. S. Rubber Products Co., Passaic, N. J.; and J. W. Dillow, 795 W. Market St., Akron, Ohio.

In addition, a general symposium on rheology subjects is being developed by Dr. E. C. Bingham, Lafayette College, Easton, Pa.; and Dr. A. Nadai, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.

Authors having papers which they wish to present at this time are invited to contact the respective committees.

Matters Referred to Letter Ballot

By action of the annual meeting 37 recommendations from the standing committees affecting standards and tentative standards were referred to letter ballot of the membership. The 37 recommendations which involve Society standardization work comprise 20 tentative standards proposed for adoption as standards and revisions of 17 existing standards. A complete list of the items to be voted upon appears in the letter ballot enclosed with this BULLETIN. Detailed information concerning all matters referred to letter ballot is given in the committee reports issued in preprint form to the membership in advance of the meeting. The accompanying *Summary of Proceedings* contains a record of the actions taken at the annual meeting and includes particularly the changes in or additions to the committee reports as preprinted.

All members in good standing are urged to execute the enclosed ballot and vote on the matters on which they feel technically qualified to pass judgment.

1936 A.S.T.M. Meetings

The 1936 (Thirty-ninth) A.S.T.M. Annual Meeting is to be held in Atlantic City from June 29 to July 3, inclusive, according to action taken by the Executive Committee, after giving careful consideration to this matter. While the meeting normally would have been held during the previous week, Atlantic City during that time is to be host to a large international organization and it is felt that the week which has been chosen will result in better hotel accommodations.

It has been decided to hold the 1936 Regional Meeting in Pittsburgh on Wednesday, March 4. Arrangements for this will be sponsored by the Pittsburgh District Committee. The program committee is developing a Symposium on High Strength Constructional Metals, and the committees of the Society interested in this program are taking part in its development. During the week from March 2 to 6 the Spring Group Meetings of committees will be in progress.

Roads and Rides Symposium Available

The three papers comprising the Symposium on the Place of Materials in Automobile Roads and Rides held during the annual meeting, complete with the discussion, will be made available. The three papers are entitled: "The Road" by J. S. Worley, "Tires and Their Place in Automotive Transportation" by K. D. Smith and "The Car" by O. T. Kreusser. The printed symposium will be distributed without charge on request and each member may secure a copy by returning the accompanying coupon or by writing to Society headquarters.

AMERICAN SOCIETY FOR TESTING MATERIALS
260 S. Broad St., Philadelphia, Pa.

Gentlemen:

Kindly send me a copy of the Symposium on the Place of Materials in Automobile Roads and Rides.

Member.....
(Print Name)

Address.....



V. Long-Time Society Committee Members

Fifth in the Series of Notes on Long-Time A.S.T.M. Members

CONTINUING the series of articles in the A.S.T.M. BULLETIN comprising notes on the outstanding activities of long-time members of the Society, there appear below outlines of the work of three additional members. In general the men whose sketches will appear in this series will have been affiliated with the Society for 25 years or more and will have taken part in committee work for long periods. No definite sequence is being followed in these articles.

S. R. CHURCH, Consulting Chemist, New York City, graduated from Pratt Institute in 1904, receiving the alumni medal in chemistry. Until 1925 he was connected with The Barrett Co., holding various positions including Manager of the Research Dept. for several years, and Manager of the Tar and Oil Division of the General Manufacturing Dept. Since 1925 he has been in consulting practice, specializing in the field of bituminous materials.

Mr. Church's membership in the Society dates from 1907, at which time he became a member of Committee D-8 on Waterproofing and Roofing Materials. Since then, except for a few years, he has been active in the work of this committee. He was a member of Committee D-4 on Road and Paving Materials for many years. One of his most important committee activities has been as chairman of the Subcommittee on Timber Preservatives of A.S.T.M. Committee D-7 on Timber. He has been chairman of this subcommittee since its organization in 1914, when he became a member of the parent committee. Mr. Church represents A.S.T.M. on the Sectional Committee on Standardization of Cast Iron Pipe and is chairman of its Subcommittee on Organic Coatings.

Mr. Church has been for many years an active member of the American Wood Preservers' Association and was president of the organization last year.

D. E. DOUTY, President, United States Testing Co., Inc., received his B.S. degree from the University of Washington in 1892 and subsequently was tutor and instructor at that institution. For three years he was a Graduate Fellow of Clark University and from 1903 to 1913 Doctor Douty was Assistant and Associate Physicist, National Bureau of Standards, Washington, D. C. In 1913 he became Vice-President and General Manager, United States Testing Co., and assumed his present position in 1934.

Doctor Douty has been a member of the Society since 1906 and has taken an active part in a number of committee activities. He served a period as secretary of the Committee on Brick and from 1913 to 1915 was secretary of the then Committee on Hardness Testing. One of his major committee activities has been in connection with Committee D-13 on Textile Materials. He was one of the original members when this committee was organized in 1915 and was secretary from 1916 to 1920. He still holds membership on the committee. From 1920 to 1922 Doctor Douty was a member of the Society's Executive Committee.

H. M. BOYLSTON, who has been Professor of Metallurgy and Head of the Department of Metallurgical Engineering, Case School of Applied Science since 1920, received his degree

of S.B., *Cum Laude*, in chemistry at Harvard University in 1903 and his A.M. in 1905 after graduate studies in metallurgy. After a period as assistant to Henry M. Howe, he taught metallurgy and metallography under Doctor Sauveur at Harvard until 1912. He formed a business partnership with Doctor Sauveur and continued in this work until he was appointed to his present position at Case. In 1927 Professor Boylston received the degree of Met. E. from Case School.

Professor Boylston has held many important consulting connections and has specialized in patent litigation. He has written a number of technical books and articles.

A member of the Society since 1907, Professor Boylston was secretary of Committee A-4 on Heat Treatment of Iron and Steel from 1918 to 1920, and served as chairman until 1932. He is one of the A.S.T.M. representatives on a joint committee sponsored by the S.A.E., A.S.M. and the Society in developing standard definitions for terms relating to heat treatment operations. For a number of years he represented Committee A-4 on Committee A-1 and also was a member of the former Committee on Hardness Testing. He has

been active in the work of other organizations, secretary of the Iron and Steel Committee of the A.I.M.E., and chairman of its Committee on Metallography from 1915 to 1932.



S. R. CHURCH H. M. BOYLSTON D. E. DOUTY

Southern California Committee Reorganizes

At a meeting held early in July the Southern California District Committee was reorganized in accordance with the new charter. As a result of election of officers, T. A. Fitch, Director, Bureau of Standards, City of Los Angeles, was chosen chairman; R. R. Martel, Associate Professor of Civil Engineering, California Institute of Technology, vice-chairman; and E. O. Slater, Vice-President and Manager, Smith-Emery Co., was chosen secretary. The following members of the committee have been appointed:

For the term expiring 1936:

E. F. Bent, Vice-President, American Concrete and Steel Pipe Co.
T. A. Fitch
P. E. Jeffers, Structural Engineer, Los Angeles, Calif.

For the term expiring 1937:

G. A. Beckett, General Manager, Riverside Cement Co.
G. J. Carroll, Vice-President, Consolidated Steel Corp.
E. O. Slater

For the term expiring 1938:

H. L. Doolittle, Chief Designing Engineer, Southern California Edison Co.
R. E. Haylett, Director of Manufacturing, Union Oil Co. of California
R. R. Martel

There was discussion at the meeting as to ways and means of stimulating interest in Society work in the Southern California area and the committee plans to develop a definite program.

The Pacific coast district committees will serve a most important purpose in effecting a closer tie-in of the members on the coast with the active work of the Society. Criticism and comments on specifications, discussion of papers presented at the meetings, etc., will be stimulated by Pacific coast district committees.



Current Committee Standardization Activities

Several Important Projects Nearing Completion—Many Others Under Way

A SUMMARY of some of the important committee standardization activities involving several projects which are nearing completion and a number of others on which work has been started is presented below. This information supplements the reviews of committee work presented in the respective annual committee reports and gives an idea of the excellent progress being made in a number of fields.

Ferrous and Non-Ferrous Metals

Several proposed specifications are being voted upon by Committee A-1 on Steel and will be submitted to the Society in August for approval as tentative. Materials covered include carbon-steel and alloy-steel castings for railroads, carbon-steel castings for miscellaneous industrial uses, electric-resistance-welded boiler tubes, seamless carbon-steel heat exchanger and condenser tubes, forged steel pipe flanges for general service, alloy-steel forgings for temperatures up to 1100 F. and nut material used in bolting for high-temperature and high-pressure service.

The Wrought Iron Committee is considering revisions in several specifications to harmonize various requirements with new specifications issued by the American Association of Railroads. One of the important problems on which Committee A-7 on Malleable Iron Castings is at work is the development of specifications requirements for malleable flanges, pipe fittings and valve parts.

The establishment of standard specifications for ferro-phosphorus is one of the projects actively under way in Committee A-9 on Ferro-Alloys, in addition to a careful review of existing specification to take care of any revisions necessary to bring them up to date.

Committee A-10 which has completed one of its most active years and recommended four new specifications which were approved at the annual meeting will submit eight additional specifications to the Society. Included in the materials covered by the new specifications are soft corrosion-resisting chromium steel sheets and strips and high-strength corrosion-resisting chromium-nickel steel sheets and strips. Six casting specifications cover alloy castings of the following types:

28 chromium, 9 nickel	20 nickel, 9 chromium
24 chromium, 12 nickel	25 chromium, 20 nickel
20 chromium, 9 nickel (1S-8 type)	35 nickel, 15 chromium

In the non-ferrous field, Committee B-1 on Copper Wire is developing desirable modifications in the Tentative Specifications for Hard-Drawn Copper Transmission Cable (B 87-32 T) and will give further study to specifications recently approved for bare concentric lay copper cable.

Committee B-4 on Electrical-Heating, Electrical-Resistance and Electric-Furnace Alloys as the result of investigations on two types of machines for determining resistance of electric-resistance wire is expected to standardize one of the machines. Its work to develop sound castings for high-temperature tension test specimens for cast and wrought alloys and the studies on thermostatic metals are being continued.

Committee E-2 on Spectrographic Analysis has developed standardized methods which will be submitted for publication as tentative. They cover quantitative spectrographic analysis of zinc, zinc die-castings and high-grade pig lead, for various elements.

Committee E-4 on Metallography is revising the Recommended Practice for Photography as Applied to Metallog-

raphy (E 2-30) and a number of revisions are in prospect in the Definitions Relating to Metallography (E 7-27) as well as in the text of the Standard Grain Size Chart (E 19-33).

Cementitious and Ceramic Materials

Where specifications for cement do not require complete chemical analysis and place limits upon the amount of magnesia allowable, quick methods of determining this are desirable and Committee C-1 on Cement is working on this problem and has also inaugurated work involving the determination of manganese oxide and ferrous oxide.

The Committee on Refractories is giving further consideration to the desirability of establishing a new series of test pyrometric cones with uniform temperature intervals. Further studies of the proposed method of abrasion test of refractories will be made, and studies will continue on the petrographic examination of certain types of refractories.

Committee C-10 on Hollow Masonry Building Units will study methods of classifying materials in accordance with weathering properties. Detailed specifications for fire proofing tile are also under consideration. The committee is now balloting on proposed revisions in the Specifications covering Structural Clay Load-Bearing Wall Tile, Structural Clay Floor Tile and Structural Clay Non-Load-Bearing Tile.

Preservative Coatings

Committee D-1 on Preservative Coatings has as usual a very active program under way. Methods for determining reactivity of varnishes, standard adhesion tests and a study of methods for evaluating failures of varnishes upon exposure are under way. Test methods for petroleum thinner for lacquer are being developed and also standard methods of determining hardness, wear, and abrasion properties of finished lacquers will be studied. One of the most interesting and extensive phases of the committee's work involves shellac because of the present wide international interest in test methods and specifications for this material and a number of subjects are included for study.

Committee D-17 on Naval Stores will continue to work on the viscosity of rosin, crystallization, and size-making value and alum test, other projects being active.

Road Materials, Roofing Materials

Committee D-4 on Road and Paving Materials as result of extensive work during the past year has developed nine proposed methods for soil analysis covering such problems as sampling, liquid and plastic limits, plasticity index, shrinkage factors and mechanical analyses. These are developed to the point where they will be submitted shortly to the Society for publication as tentative.

In the bituminous waterproofing and roofing materials field Committee D-8 expects to make revisions in the analytical methods and an attempt will be made to develop satisfactory requirements for filling materials in roofing. Test methods for determining adhesion of roofing granules to asphalt coatings are being studied and an effort will be made to select one of the present five instruments which are in use and to standardize it tentatively.

Coal, Timber and Textile Materials

Committee D-5 on Coal and Coke will continue experiments to find a satisfactory inert material for mixing with

(Concluded on page 18)



Relationship of Specifications to the Engineering Profession

(Continued from page 7)

We were fortunate in our guesses and after a few trials we obtained springs which have performed satisfactorily thus far. It remains to be seen whether they will be useful or useless one or two years hence.

Then came the task of commercializing this development. When one contemplates the purchase of springs by the hundreds or thousands he naturally thinks of a more formal specification than that just described. We prepared a partial specification in tentative form and sent it to several representative rubber manufacturers for comment and criticism. It developed that these manufacturers did not have the technical information necessary to enable them to comment. They are now busily engaged in the experimental work required to develop it.

Research Is Fundamental

Here you have a very characteristic picture of the way in which engineering, materials and specifications develop. Back of it all lies research and, in general, we progress in proportion to the extent of the research. The engineering need for rubber springs in this case developed as the result of research which indicated that their use would overcome certain undesirable phenomena attributable to the use of more conventional material. The first designs were based upon research in certain of the more significant properties of rubber, incomplete but sufficient for the immediate purpose. Then there developed the need for further research in order that the rubber used in such springs and the springs themselves might be properly specified. And, after this has all been accomplished, this particular field of engineering will have been developed through its first step.

You see how intimately specification is tied to engineering both as to development and practice. They are indeed inseparable. Development begets specification and specification in turn begets development. One might engage in an academic discussion of the hen and egg variety but it would be meaningless in this situation. We progress only because we maintain a more or less precarious but nevertheless practical balance between the development of knowledge of the properties of materials, the application of such materials to engineering purposes and the production of useable specifications. When we get too far out of balance in any particular respect sufficient pressure in the direction of rectification develops more or less automatically.

The age in which we now live is characterized, among other things, by a tendency toward what may be called universal questioning. We are refusing to accept something merely because it has been or is. We insist upon analyzing, weighing, testing, evaluating in our effort to understand and, if possible, to improve. This is true with respect not only to such things as materials, processes and the like but also with respect to our methods of doing practically all the innumerable things that human beings engage in. I sometimes think that we are working too hastily in many of these endeavors and that frequently we draw too hasty conclusions, particularly with respect to social and economic questions. But we cannot ignore the tendency as a whole; and I think we must regard it as representative of a healthier general state of mind than that which characterizes a sodden, unthinking and unquestioning acceptance of things as they are.

Carrying on the Work

Living in such an age it is only natural that we who are assembled here and others like us should look rather critically at the ways in which we now carry on that part of the world's work to which my remarks of this morning are addressed.

Your Society and others have done much in recent years toward improving the situation. Even so, I feel that we still do too great a part of our work in this field in an unnecessarily higgledy-piggledy fashion. There is still too general a lack of appreciation of the real significance of what we call a specification; there is still too great a gap between our present knowledge and that which would be required for the preparation of ideal specifications. And I say to you without fear of contradiction that engineering can be only as good as its specifications. By this I do not mean that specifying constitutes the whole of engineering; far from it. But even the best of engineering dreams, calculations and designs are practically useless until they have been made real, let us say have been embodied; and this is done necessarily through the specification route. Thus, successful specification is seen to be one of the prerequisites for the success of any engineering project.

You are meeting in the center of the automotive industry. It furnishes an excellent example of the sort of thing that must be done more widely if we are to improve greatly our practices in the field I refer to. Here is an industry which has made a thorough investigation of many of its important material and specification problems and has recorded these results in readily understandable form for the benefit of all concerned. Moreover, it has provided for such continuing revision and extension as may be necessary.

Some other industries have engaged and are engaged in similar activities to greater or lesser extent. But this may be said of all too few of them. In most fields we still have very meager and sometimes even questionable data.

This is in a sense "old stuff" to those of you in A.S.T.M. who are really in touch with the work of your Society. You know the tremendous amount of energy that your organization has exerted through the years in an effort to improve our situation in such respects. You realize that adequate and otherwise satisfactory testing methods must go hand in hand with the development of adequate methods of specification. And you realize that back of all this must lie a comprehensive experimental and analytical attack upon the properties of materials because, in the ultimate analysis, it is knowledge of such properties that forms the basis for all the other things.

Weakness Lies in Method of Getting Data

As I see our situation, our great weakness at present lies in our lack of a more orderly procedure for uncovering the fundamental knowledge required. In all too many cases we are dependent upon the more or less accidental interest of some lone experimenter in some particular problem. In all too few instances do we organize a collective and comprehensive attack upon a given piece of territory. This usually occurs only after we have found ourselves in such hot water that we have our choice between finding hastily a ladder out of the pool or remaining to be boiled. And no one really relishes being boiled.

Permit me, by way of example, to recall the work on fatigue loading done some time ago at the University of



Illinois under the direction of Prof. H. F. Moore. Here was a case in which dependence upon the haphazard method of procedure had not resulted in the production of the needed results. Certain engineering problems called for such information and, as the saying goes, "it was needed yesterday." Adequate financing and a comprehensive attack yielded fairly quickly such rudimentary knowledge as was immediately necessary. And this attack started similar activities elsewhere so that now we are beginning to get something more nearly approaching fundamental knowledge in this field.

I might cite as an example of a somewhat different type the recent international investigation of the properties of water and steam. A few comparatively inexpensive laboratory investigations, carefully planned and well correlated, served to bring order out of something approaching chaos. Now we have such an exact and extended knowledge of the thermal and certain other properties of these important engineering materials that we may regard the story as closed for some time in a practical engineering sense.

In contrast to such situations we have the tremendous number of cases in which phenomena which would yield readily to comparatively simple mass attack are still just as much the subject of debate as they were five or ten or twenty-five years ago. I think the day of that sort of thing should be behind us. Unfortunately it is not. But that is no reason why we should not prepare to put it behind us as rapidly as possible. And I think this Society is capable of being a much more powerful influence in that direction if it will consciously address itself to this effort in a broad way.

Understand, I know full well many of you will say that this is just what you are doing and, in fact, represents one of the major objectives of your organization. With this I have no quarrel. Nor do I wish to be understood as under-rating the very important and very extensive work you have done and are doing. I merely point out that I believe it possible to do a much more comprehensive and a much more expeditious job.

It was asked to speak on the relationship of specifications to the engineering profession. I hope I have made clear the fact that specifications and practical engineering are so closely associated, in fact so indissolubly bonded that the practice of engineering without specification is a practical impossibility. I also hope that I have given you an appreciation of the many respects in which presently available specifications still lack in numerous cases that specificity without which they are only most imperfect tools. And possibly I may have left with you the impression that a greater extent of knowledge must underlie any real attempts to improve such specifications.

International Rail Assembly

The Third International Rail Assembly will be held in Budapest, Hungary, September 8 to 12, 1935, according to word received from the Hungarian Association for Testing Materials which is in charge of arrangements. Members of the Society are invited to attend this meeting.

The program will be divided into general groups as follows: General Questions, Wear, Brittleness, Internal Stresses, Aging, Working Results, Structural Questions, Welding. The participation fee is one pound (£1), for which the participant will receive by mail all summaries before the Assembly and the complete report of the Rail Assembly in book form.

The Hungarian Association, Műgyvetem, Budapest XI, Hungary, will supply further details about the Assembly.

Committee on Gaseous Fuels Organized

Announcement was made in a previous issue of the BULLETIN of the conference held to consider the formation of a new standing committee to undertake standardization work in the field of gaseous fuels. A steering committee under the chairmanship of Vice-President A. C. Fieldner, Chief Engineer, Experiment Stations Div., U. S. Bureau of Mines, and R. M. Conner, Director, American Gas Association Laboratory, as secretary, developed the details of the committee organization.

The committee was formally organized at a well-attended meeting held in Detroit during the A.S.T.M. annual meeting. At the meeting Mr. Fieldner was elected chairman with Mr. Conner as secretary, and R. B. Harper, Vice-President, The Peoples Gas Light & Coke Co., was elected vice-chairman. The Advisory Committee will consist of the three officers and Dr. G. G. Brown, University of Michigan; J. V. Freeman, U. S. Steel Corp.; and G. G. Oberfell, Phillips Petroleum Co.

In addition to these men the personnel of the committee will consist of the following:

American Ceramic Society
American Society of Mechanical Engineers (Power Test Codes Committee on Fuels, E. X. Schmidt, Cutler-Hammer, Inc.)
C. E. Bales, Ironton Fire Brick Co.
Bethlehem Steel Co., E. F. Kenney
Brooklyn Union Gas Co., J. F. Anthes
Corning Glass Works, W. W. Oakley
Earle Derby, Standard Gasoline Co.
R. L. Dodge, duPont Ammonia Corp.
H. L. Doherty & Co., H. D. Hancock
W. H. Fulweiler, United Gas Improvement Co.
A. W. Gauger, Mineral Industries Research; Pennsylvania State College
S. H. Graf, Oregon State Agricultural College
D. A. Russell, Youngstown Sheet and Tube Co.
H. S. Smith, Union Carbide & Carbon Chemicals Corp.
S. S. Tomkins, Consolidated Gas Co. of New York
Carl D. Ulmer, Koppers Construction Co.
National Bureau of Standards, E. R. Weaver
J. C. Witt, Universal Atlas Cement Co.

Advisory Member

T. R. Weymouth, Columbia Gas & Electric Corp.

The personnel of the committee will be enlarged to provide for representation of other groups and industries.

Scope of Committee and Program

After detailed discussion it was agreed that the title of the committee should be Committee D-3 on Gaseous Fuels and that its scope will be "Sampling and testing of gases where such gases are used as commercial fuels."

Careful consideration was given at the meeting to a preliminary program of work which had been drawn up by the secretary for consideration. The main subjects selected for immediate development by the committee are as follows:

Collection of Samples	Calorific Value
Measurement of Samples	Specific Gravity or Density

Subcommittees are being appointed to handle these subjects. The committee decided to hold its next meeting during the annual convention of the American Gas Association during the second week of October in Chicago.

Congress of Industrial Chemistry

The Fifteenth Congress of Industrial Chemistry is to be held in Brussels, Belgium, September 22-28, coinciding with the International Exposition. Members of the Society are invited to attend this Congress. The general secretary of the Congress is the Federation of Belgium Chemical Industries, 132a, Boulevard Maurice Lemonnier, Brussels.



Heavy Publication Schedule During Balance of Year

In Addition to Regular Publications Several Special Books and Pamphlets Will Be Issued

IN ADDITION to the so-called regular publications as indicated below including *Proceedings*, Year Book, 1935 Supplement to Book of Standards, Index to Standards, etc., there are a number of special books which are to be published within the next few months, these having been authorized by the Committee on Papers and Publications.

Brief notes on some of the publications are given below for members' information and a list of all of the publications with the special prices to members and other descriptive information will be sent in the form of an order blank to each member in September.

The special compilations of standards issued during the past few years have become of increasing significance and it is of interest to note that two additional committees may sponsor this year compilations of certain standards in their jurisdiction, namely, Committees D-8 on Bituminous Waterproofing and Roofing Materials and D-11 on Rubber Products.

A number of committee reports of much interest with data that is of widespread value will be reprinted, including the reports of the two corrosion committees, A-5 and B-3, the report of Committee B-6 on Die-Cast Metals and Alloys and also D-14 on Screen Wire Cloth.

Regular Publications

Proceedings.—Will include as customary the extensive technical papers, committee reports, new and revised tentative standards and tentative revisions of standards presented at the 1935 annual meeting. The inclusion of the extensive discussion on the various items adds to the value of the data given.

1935 Supplement to Book of Standards.—Will give all of the 37 standards either newly adopted in 1934 or in which important revisions have been adopted. This is furnished without charge to members and all purchasers of the 1933 Book of Standards.

Combined Index to Standards.—This Index, which becomes of greater value as the number of standards increases, will again give the latest complete references to publications where the various specifications and test methods appear. This is furnished to members and is also widely distributed on request.

Year Book.—Includes list of complete membership of the Society (name, address, company, etc.), the personnel of all A.S.T.M. committees, and other pertinent information. Furnished to members on request.

1935 Book of Tentative Standards.—A compilation of all of the tentative standards of the Society, over 265, in their latest form. Although the current *Proceedings* will give the new tentative standards and revisions approved this year, the convenience of having in one place all of the A.S.T.M. tentative specifications and methods makes this book in wide demand.

Symposium on Paint and Paint Materials.—A special order blank for this publication was sent to members in May and copies of the book are now being distributed. Comprising the 15 technical papers presented at the Philadelphia Regional Meeting, with some 35 pages of discussion, the book of 150 pages has met with many favorable comments.

Committee Reports—Special Publications

Reports of Corrosion Committees.—Reprints of the 1935 annual reports of Committees A-5 on Corrosion of Iron and

Steel and B-3 on Corrosion of Non-Ferrous Metals and Alloys, summarizing their activities and presenting data and information developed in the series of important corrosion test programs respectively sponsored. The B-3 report especially has a great deal of interesting and valuable data presented in tabular form.

B-6 on Die-Cast Metals and Alloys.—This report gives extensive information on the corrosion studies which the committee has had under way for five years, both indoor and outdoor, on various aluminum and zinc alloys.

D-14 on Screen Wire Cloth.—Includes complete data resulting from long-time corrosion studies on non-ferrous alloy wire insect screen cloth.

Supplement to Manual on Presentation of Data.—Two supplements to the A.S.T.M. Manual on Presentation of Data will be published under the sponsorship of Committee E-1. The first presents "limits of uniformity of an observed average" suggesting a form of presentation for use in A.S.T.M. work and the second "a control chart method of analyzing data."

Symposium on Automobile Roads and Rides.—Comprises three papers on the "road," "tires," and "car"—presented at the annual meeting. To be issued in pamphlet form and distributed to members on request. (See page 9.)

Symposium on Spectrographic Analysis.—This will comprise the six papers and discussion presented at the annual meeting session on this subject. The symposium was one of the high spots of the meeting and much interest has been shown in the papers.

Edgar Marburg Lecture.—Separate copies of the 1935 lecture on "Aircraft: Materials and Testing" by Dr. L. B. Tuckerman will be made available.

Special Compilations of Standards

These special compilations sponsored by the respective Society committees have the common purpose of providing a compact, convenient reference to the various Society specifications and test methods applicable to the particular field given in their latest approved form. In addition to the test manuals to be sponsored by Committees D-8 and D-11 as indicated above the following will be issued:

Preservative Coatings.—This includes the 103 standard and tentative specifications, tests and definitions developed by Committee D-1 covering pigments, varnishes, oils, paint materials, etc.

Petroleum Products.—Contains the 1935 report of Committee D-2 and the 65 standard and tentative methods of testing.

Electrical Insulating Materials.—Gives the extensive 1935 report of Committee D-9 and the 33 specifications and tests pertaining to these materials.

Textile Materials.—Gives some 40 A.S.T.M. specifications and test methods covering textile materials, data on A.S.T.M. and Committee D-13 work in the textile field, etc.

The distribution of these special compilations of standards has been increasing and there is apparently a definite demand for the books because of their convenience. In addition to the above, Committee D-5 on Coal and Coke sponsored a compilation of its standards late in 1934 and the Refractories Manual including all A.S.T.M. standards on refractory materials was issued early in 1935, under the sponsorship of Committee C-8.



New and Revised Tentative Standards

Standardization List Greatly Augmented

The Society accepted at the annual meeting 47 new tentative standards and revisions of 49 existing tentative specifications and methods of test. Of the new tentative standards, 34 represent additions to the standardization list, 13 are revisions of existing standards. Seven of the 49 revised tentative specifications and test methods represent extensive modifications. The titles of these are included below with the list of those issued by the Society for the first time. Standing committees responsible for the various items are indicated in italics.

FERROUS METALS

Specifications for:

- Axle-Steel Concrete Reinforcement Bars (A 160-35 T). *Committee A-1 on Steel.*
- Seamless Low-Carbon-Steel Still Tubes for Refinery Service (A 161-35 T). *Committee A-1.*
- Uncoated Wrought-Iron Sheets (A 162-35 T). *Committee A-2 on Wrought Iron.*
- Zinc-Coated (Galvanized) Wrought-Iron Sheets (A 163-35 T). *Committee A-2.*
- Automotive Gray-Iron Castings (A 159-35 T). *Committee A-3 on Cast Iron.*
- Gray-Iron Castings (A 48-35 T) (revision of tentative standard). *Committee A-3.*
- Electrodeposited Coatings of Zinc on Steel (A 164-35 T). *Committee A-5 on Corrosion of Iron and Steel.*
- Electrodeposited Coatings of Cadmium on Steel (A 165-35 T). *Committee A-5.*
- Electrodeposited Coatings of Nickel and Chromium on Steel (A 166-35 T). *Committee A-5.*
- Soft Corrosion-Resisting Chromium-Nickel Steels (Sheets, Strip and Plates) (A 167-35 T). *Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys.*
- 12 per cent Chromium Steel Castings (A 168-35 T). *Committee A-10.*
- 19 per cent Chromium Steel Castings (A 169-35 T). *Committee A-10.*
- 28 per cent Chromium Steel Castings (A 170-35 T). *Committee A-10.*

Definitions of:

- Terms, with Units and Symbols, Relating to Magnetic Testing (A 127-35 T) (revision of standard). *Committee A-6 on Magnetic Properties.*

NON-FERROUS METALS

Specifications for:

- Bare Concentric-Lay Copper Cable: Hard, Medium-Hard or Soft (B 8-35 T) (revision of standard). *Committee B-1 on Copper Wire.*
- Bronze Trolley Wire (B 9-35 T) (revision of standard). *Committee B-1.*
- Lead-Coated Sheet Copper (B 101-35 T). *Committee B-2 on Non-Ferrous Metals and Alloys.*
- Copper-Silicon Alloy Wire for General Purposes (B 99-35 T). *Committee B-5 on Copper and Copper Alloys, Cast and Wrought.*
- Wrought Phosphor-Bronze Bearings and Expansion Plates for Bridges and Structures (B 100-35 T). *Committee B-5 on Copper and Copper Alloys, Cast and Wrought.*
- Lead and Tin-Base Alloy Die Castings (B 102-35 T). *Committee B-6 on Die Cast Metals and Alloys.*

METALLOGRAPHIC TESTING

Recommended Practice for:

- Metallographic Testing of Ferrous and Non-Ferrous Metals (E 3-35 T) (revision of Standard Methods E 3 and E 5). *Committee E-4 on Metallography.*

BRICK AND REFRACTORIES; CLAY PIPE

Specifications for:

- Building Brick (Made from Clay or Shale) (C 62-35 T) (revision of standard). *Committee C-3 on Brick.*

Methods of:

- Testing Brick (Compression, Flexure, Absorption) (C 67-35 T) (revision of standard). *Committee C-3.*

Definitions of:

- Terms Relating to Refractories (Insulating Fire Brick, Insulating Brick, Calcining, Burning or Firing, Hard Burned, Medium Burned, Light Burned, Grog Fire-Clay Mortar) (C 71-35 T). *Committee C-8 on Refractories.*
- Terms Relating to Clay Sewer Pipe (C 8-35 T) (revision of standard). *Committee C-4 on Clay Pipe.*

CONCRETE AND CONCRETE PIPE

Specifications for:

- Concrete Irrigation Pipe (C 118-35 T). *Committee C-13 on Concrete Pipe.*

- Reinforced Concrete Culvert Pipe (C 76-35 T) (revision of tentative standard). *Committee C-13.*

Method of:

- Making Compression Tests of Concrete Using Portions of Beams Broken in Flexure (C 116-35 T). *Committee C-9 on Concrete and Concrete Aggregates.*
- Determining Voids in Coarse Aggregate (C 30-35 T) (revision of standard). *Committee C-9.*
- Test for Amount of Material Finer than No. 200 Sieve in Aggregates (C 117-35 T). *Committees C-9 and D-4 on Road and Paving Materials.*
- Test for Soundness of Fine Aggregates by Use of Sodium Sulfate or Magnesium Sulfate (C 88-35 T) (revision of tentative standard). *Committee C-9.*
- Test for Soundness of Coarse Aggregates by Use of Sodium Sulfate or Magnesium Sulfate (C 89-35 T) (revision of tentative standard). *Committee C-9.*

PIGMENTS, VARNISHES AND PAINT MATERIALS

Specifications for:

- White Pine Wood to be Used in Weather Tests of Paints (D --- 35 T). *Committee D-1 on Preservative Coatings.*
- Blue Lead; Basic Sulfate (D 405-35 T). *Committee D-1.*

Method of:

- Test for Comparative Hiding Power of White Pigments (D 406-35 T). *Committee D-1.*
- Testing Oleo-Resinous Varnishes (Skinning, Alkali Resistance, Acid Number) (D 154-35 T) (revision of standard). *Committee D-1.*

PETROLEUM PRODUCTS; ASPHALTIC MATERIALS

Method of:

- Test for Flash Point by Means of the Tag Closed Tester (D 56-35 T) (revision of standard). *Committee D-2 on Petroleum Products and Lubricants.*
- Test for Viscosity by Means of the Saybolt Viscosimeter (D 88-35 T) (revision of standard). *Committee D-2.*
- Volume Correction Table for Asphaltic Products (tentative approval of Groups 0 and 1 of the Standard D 206) (D --- 35 T). *Committees D-4 on Road and Paving Materials and D-8 on Bituminous Waterproofing and Roofing Materials.*

COAL AND COKE

Method of:

- Test for Grindability of Coal by Ball-Mill Method (D 408-35 T). *Committee D-5.*
- Test for Grindability of Coal by Hardgrove-Machine Method (D 409-35 T). *Committee D-5.*
- Test for Screen Analysis of Coal (D 410-35 T). *Committee D-5.*
- Terms Gross Calorific Value and Net Calorific Value of Fuels (D 407-35 T). *Committee D-5 on Coal and Coke.*

TIMBER; WATERPROOFING AND ROOFING MATERIALS

Specifications for:

- Timber Piles (D 25-35 T) (revision of tentative standard). *Committee D-7 on Timber.*
- Asphalt for Use in Constructing Built-Up Roof Coverings (D 312-35 T) (revision of tentative standard). *Committee D-8 on Bituminous Waterproofing and Roofing Materials.*

Method of:

- Test for Coarse Particles in Mixtures of Asphalt and Mineral Matter (D 313-35 T) (revision of tentative standard). *Committee D-8.*

ELECTRICAL INSULATING MATERIALS; RUBBER PRODUCTS

Methods of:

- Testing Shellac Used for Electrical Insulation (D 411-35 T). *Committee D-9 on Electrical Insulating Materials.*
- Physical Testing of Rubber Products (General Requirements) (D 15-35 T) (revision of standard). *Committee D-11 on Rubber Products.*
- Tension Testing of Vulcanized Rubber (D 412-35 T). *Committee D-11.*
- Test for Adhesion of Vulcanized Rubber (Friction Tests) (D 413-35 T). *Committee D-11.*

TEXTILE MATERIALS

Specifications for:

- Textile Testing Machines (D 76-35 T) (revision of standard). *Committee D-13.*

Methods of:

- Test (General) for Properties of Cotton Fibers (Length and Length Distribution, Fineness, Immaturity Count, Strength) (D 414-35 T). *Committee D-13 on Textile Materials.*
- Test for Shrinkage in Laundering of Silk and Rayon Woven Broad Goods (D 416-35 T). *Committee D-13.*
- Test for Strength of Rayon Woven Fabric When Wet (D 415-35 T). *Committee D-13.*



1935 Annual Meeting

(Continued from page 4)

Corrosion, Creep, Fatigue

As a result of considerable research work carried out at the National Bureau of Standards and reported in a paper on "Continuous-Flow Corrosion Tests of Steel Pipe" by Messrs. Rawdon and Waldron, it was indicated that distribution of corrosion within a pipe is affected by the degree of turbulence in the flow. The maximum rate was at the inlet and progressively decreased along the length of the column.

A paper on corrosion control in air-conditioning equipment by C. M. Sterne points out that tests have proven that with proper chemical treatment and supervision this vexing problem may be reduced to a minimum. It is stated that the tests show dichromates offered the best protection.

Extended-time creep tests conducted at 1000 F. on plain carbon steel and chromium-silicon-molybdenum steel, as well as metallographic, X-ray and hardness examinations of the fractured specimens were reported in a paper on "Influence of Time on Creep of Steels" by A. E. White, C. L. Clark and R. L. Wilson.

In a paper on "Creep Characteristics of Aluminum Alloys" R. R. Kennedy, U. S. Army Air Corps, described researches on nine alloys. The creep rates of the alloys varied over a wide range. Sand-cast aluminum-copper-nickel-magnesium alloy had the best creep characteristics of the alloys tested.

High-speed fatigue tests of several ferrous and non-ferrous metals at low temperatures were described by W. D. Boone and H. B. Wishart, University of Illinois. As the temperature was decreased the endurance limits of the metals increased. The stress concentration factors showed no consistent change.

Petroleum Products

Two interesting papers on oil consumption were given in the session devoted to petroleum products, one by Davis and Best, Continental Oil Co., covering the effect of volatility; the other by M. O. Teetor, The Perfect Circle Co., which stressed the influence of engine design on oil consumption. The results reported in the first-named paper showed a wide difference in consumption due to volatility indicating that this is a more important factor of consumption than has heretofore been thought. Mr. Teetor in his paper indicated that many elements of engine design affect oil consumption. While most of the elements are known, the extent of their individual or combined influence is not very well known. The paper discussed the following subjects and their relation to the control of oil consumption: Oil leaks, cylinder lubrication, theory of oil film action on cylinder walls, piston and ring designs, cylinder distortion, temperatures and finish.

Masonry Materials

In a paper appended to the report of Committee C-3, J. W. McBurney discussed the relation of freezing and thawing to physical properties of clay and shale brick. It was indicated that strength or water absorption in combination with the ratio 48-hr. cold-water absorption to 5-hr. boiling-water absorption (C_{48}/B_5) provides a reasonable method of classifying brick into resistant and non-resistant with respect to freezing-and-thawing cycles.

In their paper on "Tests of Mortars for Reinforced Brick Masonry," Withey and Wendt, University of Wisconsin, reported data on some 82 mixes and 4000 test specimens.

They stated that mortars of 1 part portland cement to 4 parts sand, by weight, tempered with 25 to 33 per cent of hydrated lime or 20 to 25 per cent of very finely ground clay are sufficiently workable and strong for most reinforced brick masonry under moderate exposures.

D. W. Kessler, National Bureau of Standards, in his paper describing "A Test Procedure for Plastic Caulking Materials" stated that four types of tests are now used at the Bureau intended to determine qualities having a bearing on service performance, including the "strain test," "staining tests" the "slump test," and "copper corrosion tests."

Cement and Concrete

Three interesting papers in the field of concrete durability were presented in the session on cement and concrete. Prof. R. W. Carlson, Massachusetts Institute of Technology, in his paper on "The Chemistry and Physics of Concrete Shrinkage" listed eleven factors having major influence and five whose influence is of a minor nature. Included in the former group were the amount of cement paste in the concrete, amount and quality of gel in the hydrated cement and the porosity of the aggregate.

In his paper on the "Shrinkage of Concrete" Prof. Inge Lyse, Lehigh University, concluded as a result of shrinkage observations made on a large number of 3 by 6-in. cylinders that the quantity of the paste had little effect upon the shrinkage, while the quantity of the paste contributed approximately in proportion to its percentage of the volume of the concrete. Fine aggregate showed more effect upon shrinkage than did coarse aggregate.

H. S. Mattimore and G. A. Rahn, Pennsylvania State Highway Dept., in their paper on "Research on Concrete Disintegration" presented the results of a research project undertaken to determine the cause of an abnormal rate of disintegration of concrete structures in northern Pennsylvania, and concluded that further study should be given the tetra-calcium aluminate ferrate (C_4AF) and alkali content in cements to be used in concrete subject to extreme exposure.

Road Materials, Soils

Prof. L. F. Rader, Brooklyn Polytechnic Institute, described equipment and methods of test for modulus of rupture, modulus of elasticity in flexure, and toughness of asphaltic mixtures chilled to low temperatures. Among the conclusions it is pointed out that sheet asphalt mixtures chilled to low temperatures are brittle materials having definite load-deflection curves and advantageous use of low-temperature physical tests of mixtures may be made in designing asphaltic mixtures.

Among the conclusions reported by D. S. Berry, Michigan State Highway Dept., in his paper on "Stability of Granular Mixtures" were: (1) Internal resistance or stability depends primarily on mechanical arrangement or interlocking of the individual particles; (2) stability may be measured in terms of bearing capacity or shearing resistance; (3) bearing capacity is related to boundary conditions as reflected in size of loaded area and the depth of the material.

Based on tests reported by D. O. Woolf and D. G. Runner, U. S. Bureau of Public Roads, the Los Angeles abrasion test is apparently better suited for determining the quality of coarse aggregate than the standard Deval abrasion test. A percentage of wear of 40 in the Los Angeles test is suggested as a suitable specification limit for aggregate for use in surface treatment work.



New Members to July 23, 1935

The following 98 members were elected from March 18 to July 23, 1935:

Company Members (19)

ADVANCE INDUSTRIAL SUPPLY CO., B. H. Voss, Sales Manager, 1310 Conway Bldg., Chicago, Ill.
AMERICAN MACHINE AND FOUNDRY CO., A. J. M. Tuck, Sales Manager, Amaloy Division, 511 Fifth Ave., New York City.
ARBEITSGEMEINSCHAFT DER BITUMENINDUSTRIE E. V., C. Heinrich, Neue Wilhelmstrasse 1, Berlin NW 7, Germany.
BIGELOW-SANFORD CARPET CO., INC., G. E. Hopkins, Technical Director, Thompsonville, Conn.
BORDEN MILLS, INC., G. H. Hughes, Superintendent, Box 389, Kingsport, Tenn.
CHICAGO MAIL ORDER CO., C. R. Tyson, Chemical Director, 511 S. Paulina St., Chicago, Ill.
CITIES SERVICE OIL CO., THE, N. I. Whiteley, Chief Chemist, 4614 Prospect Ave., Cleveland, Ohio.
COMPANIA ARRENDATARIA DEL MONOPOLIO DE PETROLEOS, S. A., Bibliografia, Torija 9, Madrid, Spain.
DU PONT DE NEMOURS AND CO., E. I., Technical Library, H. L. Maxwell, Metallurgist, 8010 du Pont Bldg., Wilmington, Del.
FEDERAL PORTLAND CEMENT CO., INC., THE, J. F. Barton, Chief Chemist, Box 115, Buffalo, N. Y.
FORD ROOFING PRODUCTS CO., O. E. Gerkin, Chemist, Vandalia, Ill.
HAMILTON COKE AND IRON CO., A. E. Gillespie, Chief Chemist, Box 446, Hamilton, Ohio.
INTERNATIONAL SMELTING AND REFINING CO., ZINC OXIDE DEPT., George Anderson, Technical Superintendent, 151st St. and McCook Ave., East Chicago, Ind.
MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, J. J. Harman, General Secretary, 420 Lexington Ave., New York City.
MOHAWK CARPET MILLS, INC., L. R. Jones, Engineer, Quality Dept., Amsterdam, N. Y.
PITTSBURGH SCREW AND BOLT CORP., J. M. Yahres, Vice-President, Box 1708, Pittsburgh, Pa.
NAPH-SOL REFINING CO., W. C. Fisher, Chief Chemist, Box 307, Muskegon, Mich.
SHANGHAI POWER CO., J. K. Rummel, Chief Chemist, 95 Nanking Road, Shanghai, China.
SLOSS-SHEFFIELD STEEL AND IRON CO., Y. A. Dyer, Foundry Metallurgist, 3131 First Ave., Birmingham, Ala.

Individual and Other Memberships (73)

ANDERSON, JOHN, Head of Textile Division, Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham, England.
ANDREWS, E. T., Engineer, Pennsylvania Glass Sand Corp., Lewis-town, Pa. For mail: Mt. Union, Pa.
BARTLETT, R. D., General Manager, Franklin Steel Works, Franklin, Pa.
BARTON, G. E., Chief Chemist, Whitall Tatum Co., Millville, N. J.
BELL, E. B., Textile Chemist, Calgon, Inc., Pittsburgh, Pa. For mail: 64 Humphrey St., Lowell, Mass.
BINDER, C. A., Vice-President, St. Louis Steel Casting Co., 100 Malt St., St. Louis, Mo.
BRIDGES, F. R., Engineer, The Gamewell Co., Newton Upper Falls, Mass.
BRIGHT, H. A., Chemist, National Bureau of Standards, Washington, D. C.
CALHOUN, W. R., Superintendent of Mills, Texas Cement Plaster Co., Hamlin, Tex.
CARLSON, R. J., Engineering Assistant, Public Service Elec. and Gas Co., 80 Park Place, Newark, N. J.
CHICAGO, CITY OF, DEPARTMENT OF STREETS AND ELECTRICITY, H. L. T. Tideman, Assistant Electrical Engineer, 613 City Hall, Chicago, Ill.
COBBLEDICK, S. E., Sales Engineer, The West Virginia Rail Co., Box 118, Huntington, W. Va.
CUMMINS, A. B., Manager, Celite Research, and In Charge, Insulations, Refractories and Fiber Research, Johns-Manville Corp., Manville, N. J.
DAESEN, J. R., Chief Metallurgist, Illinois Zinc Co., 332 S. Michigan Ave., Chicago, Ill.
DEHOLCZER, L. J., General Superintendent, Rubber Division, Jenkins Bros., 510 Main St., Bridgeport, Conn.
DENNIS, J. W., Chief Chemist, Consolidated Cement Corp., 1115 Jefferson St., Fredonia, Kans.
ELLIOTT, J. L., Traffic Manager, Olson Rug Co., 2800 N. Crawford Ave., Chicago, Ill.
EVANS, R. O., Chief Engineer, Elgin Sweeper Co., Elgin, Ill.
FAHY, E. R., Electrochemist, United Chromium, Incorporated, Detroit, Mich. For mail: 323 King Ave., Detroit, Mich.
FAIRLEY, H. C., Director, Fairley Labs., 282 Alvarado St., Monterey, Calif.
FERGUSON, A. R., Engineer, Farrell Manufacturing Co., Joliet, Ill. For mail: 219 Grand Boulevard.

FREEMAN, J. V., Technical Assistant, U. S. Steel Corp., Room 1503, 71 Broadway, New York City.
GIESECKE, A. C., Engineering Dept., Minnesota Power and Light Co., 30 W. Superior St., Duluth, Minn.
GOOD HOUSEKEEPING INST., Katharine Fisher, Director, Fifty-seventh St. and Eighth Ave., New York City.
GOODWIN, G., Metallurgist, Muehlhausen Spring Co., 825 Michigan Ave., Logansport, Ind.
GRAHAM, H. W., General Metallurgist, Jones & Laughlin Steel Corp., 709 Jones & Laughlin Bldg., Pittsburgh, Pa.
GRAY, A. S., Sales Manager, Insulation Manufacturers Corp., 565 W. Washington Boulevard, Chicago, Ill.
GRIFFITH, E. M., Vice-President and General Manager, Cuyahoga Steel and Wire Co., Station D, Cleveland, Ohio.
HAASE, H. F., Consulting Engineer, 2919 W. Juneau Ave., Milwaukee, Wis.
HAMILTON COUNTY PURCHASING DEPT., M. R. Maddux, Clerk of Purchasing, 208 Court House, Cincinnati, Ohio.
HARRIS, F. W., Technical Adviser, Revere Copper and Brass Incorporated, Taunton-New Bedford Division, Taunton, Mass.
HARRISSON, J. W. E., Partner, LaWall & Harrison, 214 S. Twelfth St., Philadelphia, Pa.
HARTLINE, WALDO, Partner, Arnold, Rosch & Hartline, New Philadelphia, Ohio.
HERR, J. C., Metallurgical Engineer, The Youngstown Sheet and Tube Co., East Chicago, Ind.
JOHNSON, J. F., Fuel Analyst, Florida East Coast Ry., Box 31, St. Augustine, Fla.
KINGSTON, W. E., Engineering Dept., Hygrade Sylvania Corp., Salem, Mass.
KLEIN, F. D., JR., Superintendent, Varnish Division, Berry Brothers, 211 Lieb St., Detroit, Mich.
LINDENBERGER, HENRY, President, U. S. Reduction Co., East Chicago, Ind.
LOS ANGELES, COUNTY OF, SURVEYORS DEPT., Alfred Jones, County Surveyor, 700 Hall of Records, Los Angeles, Calif.
LOUISIANA HIGHWAY COMMISSION, H. L. Lehmann, Testing Engineer, Testing Laboratory, Baton Rouge, La.
LUMLEY, T. M., JR., Chief Chemist, Cushing Refining and Gasoline Co., Cushing, Okla.
MACHRIS, G. L., President, Wilshire Oil Co., Inc., 2455 E. Twenty-seventh St., Los Angeles, Calif.
MANN, D. F., District Sales Manager, Pittsburgh Steel Co., 500 Fifth Ave., New York City.
MANTELL, C. L., Director of Research, American Gum Importers Assn., New York City. For mail: 215 Ryerson St., Brooklyn, N. Y.
MCGEE, T. A., Secretary and Treasurer, Drake, McGee & Hallsted, Inc., 5 Beekman St., New York City.
MERRILL, M. H., Western Manager, Robert W. Hunt Co., 251 Kearny St., San Francisco, Calif.
MISSOURI BI-PARTISAN ADVISORY BOARD TO THE STATE BUILDING COMMISSION, E. M. Eagan, Executive Secretary, Jefferson City, Mo.
NEW ORLEANS SEWERAGE AND WATER BOARD, A. F. Theard, General Superintendent, 526 Carondelet St., New Orleans, La.
NEW YORK CITY, ENGINEERING DIVISION, DEPARTMENT OF FINANCE, Chief Engineer, 631 Municipal Bldg., New York City.
PARKER, N. A., President, Parker White Metal and Machine Co., Erie Pa., For mail: 25 W. Thirty-eighth St. Boulevard, Erie, Pa.
PETERSON, R. O., Chief Chemist, Victor Manufacturing and Gasket Co., 5750 W. Roosevelt Road, Chicago, Ill.
POOL, A. J., Chief Chemist, Consolidated Cement Corp., Cement City, Mich.
PRISLEY, F. A., Chemist, Wanskuck Co., 725 Branch Ave., Providence, R. I.
QUINCY, LYMAN, Vice-President and General Manager, Quaker Mineral Spirits Co., 1600 Arch St., Philadelphia, Pa.
RICE, D. D., President, Southern Mica Co., Franklin, N. C.
ROBERTS, HAYDEN, Chemical Engineer, Halliburton Oil Well Cementing Co., Box 471, Duncan, Okla.
ROUSH, R. W., Metallurgist, The Timken-Detroit Axle Co., 100 Clark Ave., Detroit, Mich.
SCHMIDT, J. W., Machine Designer, Pro-phy-lac-tic Brush Co., Florence, Mass.
SCHUSTER, MAX, Technologist, Better Fabrics Testing Bureau, New York City. For mail: 1505 Ocean Ave., Brooklyn, N. Y.
SEIL, G. E., Technical Director, E. J. Lavino and Co., Norristown, Pa.
SHOUVLIN, D. R., Engineer and Metallurgist, The National-Superior Co., Springfield, Ohio.
SMITH, H. S., Consulting Engineer, Carbide and Carbon Chemical Corp., 30 E. Forty-second St., New York City.
SPENCER, W. H., Foundry Superintendent and Metallurgist, Sealed Power Corp., Muskegon, Mich.
STAMFORD, CITY OF, L. E. Tuttle, City Engineer, Town Hall, Stamford, Conn.
STEINER, W. E., Chief Chemist, Bethlehem Steel Co., Inc., Cambria Plant, Johnstown, Pa.

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Personals

News items concerning the activities of our members will be welcomed for inclusion in this column

F. A. BARBOUR, Consulting Hydraulic and Sanitary Engineer, and retiring member of the Society's Executive Committee, was recently elected President of the American Water Works Association for the term 1935-1936.

A. C. REED, formerly Materials Engineer, New York City, is now connected with the Pittsburgh Testing Laboratory, as Consulting Chemist.

The Royal Society of Arts Albert Medal for 1935 has been awarded, with the approval of the president, the Duke of Connaught, to SIR ROBERT A. HADFIELD, "for his researches in metallurgy and his services to the steel industry." The Society's Albert Medal is awarded annually, "for distinguished merit in promoting arts, manufactures, or commerce."

K. B. COOK who was Technical Manager, Manville Jenckes Corp., has been elected Vice-President in Charge of Manufacturing of that organization.

SMITH-EMERY Co., industrial chemists and engineers, is celebrating the completion of its twenty-fifth year of continuous operation in Los Angeles. The company has representatives at San Francisco, Portland and Seattle, and is associated with the Pittsburgh Testing Laboratory which has offices in the eastern and southern industrial centers.

C. F. GOODRICH is now Chief Engineer, American Bridge Co., with offices in Pittsburgh. He was formerly Assistant Chief Engineer, New York City.

FRANCIS F. LUCAS, Metallurgist, Bell Telephone Laboratories, Inc., and DR. L. B. TUCKERMAN, Assistant Chief, Division of Mechanics and Sound, National Bureau of Standards, were awarded John Price Wetherill Medals at the Medal Day Exercises of The Franklin Institute held recently in Philadelphia.

J. C. RIEDEL, formerly Engineer of Design, Bureau of Sewers, Brooklyn, N. Y., is now Acting Deputy Chief Engineer, Board of Estimate and Apportionment, City of New York.

C. H. FELLOWS, Chemist, Research Dept., The Detroit Edison Co., was recently elected chairman of the Joint Boiler Feed Water Committee.

W. A. HAMOR, Assistant Director, Mellon Institute of Industrial Research, received the honorary degree of Doctor of Science at the commencement exercises of the University of Pittsburgh.

O. E. ROMIG, formerly Metallurgist, Gary Sheet Mill, American Sheet and Tin Plate Co., has been appointed Manager of the Electrical Sheet Division at Pittsburgh, Pa.

J. P. BARTON has been made Sales Engineer, Electrical Sheet Division, American Sheet and Tin Plate Co., Pittsburgh, Pa.

W. B. KOUWENHOVEN, Professor of Electrical Engineering, Johns Hopkins University, was recently elected a Director of the American Institute of Electrical Engineers.

R. O. GRIFFIS, is now Sheet Metallurgist, Youngstown Sheet and Tube Co., Youngstown, Ohio.

J. B. RATHER, In Charge, General Laboratories, Socony-Vacuum Oil Co., Inc., has been elected a member of the executive committee of the Society of Chemical Industry for 1935-1936.

FELIX GUENTHER, JR., formerly General Superintendent, Plant No. 1, Pennsylvania-Dixie Cement Corp., Kingsport, Tenn., is now Chief Engineer, with the same company, at Nazareth, Pa.

S. F. VOORHEES, Member of Firm, Voorhees, Gmelin & Walker, New York City, has been elected President of the American Institute of Architects.

F. H. GIBBS is now General Sales Manager, Standard Clay Products, Ltd., Montreal, Canada. Formerly he was Manager, Municipal Supplies, Ltd.

E. C. LATHROP, Technical Director, Crown Willamette Paper Co., has been appointed head of the technical and research department of the Crown Zellerbach Corp., this department consisting of the Technical Departments of each operating unit.

C. W. SPICER, Vice-President, Spicer Manufacturing Co., Toledo, Ohio, recently received the degree of Doctor of Science from Alfred University.

W. M. PHILLIPS, Works Managers Committee, General Motors Corp., was awarded the Founders Gold Medal for his outstanding paper, by the American Electroplaters' Society at their Twenty-third Annual Convention.

Current Committee Activities

(Continued from page 11)

coal in the agglutinating value test. The formulation of methods of coal sampling at coal cleaning plants for determining extraneous impurities by float-and-sink tests is proceeding and methods for collection of gross samples by mechanical means are being considered. A new group to investigate tests for dustiness of coal is in process of formation.

In the field of timber preservatives, Committee D-7 is planning to develop methods of determination of tar acids and will consider specifications for zinc chloride. A study of methods of sampling for moisture determination where moisture content is part of purchase specifications will be made. Consideration is also being given to methods of measuring knots.

Committee D-13 on Textile Materials will submit to the Society shortly for publication as tentative the following test methods: fastness of dyed or printed cotton to laundering or domestic washing; pile floor covering; shrinkage of wool; slippage in silk and rayon.

Necrology

We announce with regret the death of the following members:

ALFRED E. HAMMER, General Manager, President and Treasurer, Malleable Iron Fittings Co., Branford, Conn. Member since 1915.

A. M. LE TELLIER, Vice-President and General Manager, Cuyahoga Steel and Wire Co., Cleveland, Ohio. Member since 1917.

ROBERT T. PAESSLER, President and Manager, Robert T. Paessler Co., Inc., Wilkes-Barre, Pa. Member since 1916.

F. LEO SMITH, Technical Secretary, Structural Service Dept., American Inst. of Architects. Mr. Smith was active in a number of phases of A.S.T.M. work. He was secretary of Committee C-12 on Mortars for Masonry Materials, acting chairman of the Sectional Committee on Plastering, and represented the A.I.A. on the Joint Committee on Concrete and Concrete Aggregates and several A.S.T.M. committees.

New Members

(Continued from page 17)

STRAW, W. A., Engineer, Western Electric Co., Inc., Hawthorne Station, Chicago, Ill. For mail: 227 E. Lincoln Ave., Wheaton, Ill.

TAKASHIMA, SHOICHI, Fusi Denki Seizo K. K., Kawasaki, Kanagawa, Japan.

TERRES, E. N., Managing Director, Edleau Co., Ltd., Room 2318, 551 Fifth Ave., New York City.

VALENTA, EMANUEL, Manager of Research Inst., Skoda Works, Pilsen, Czechoslovakia.

VOKAC, ROLAND, Research Engineer, The Barber Asphalt Co., Maurer, N. J.

WELCHLY, ALBERT, Technical Representative, Common Brick Manufacturers of Philadelphia, Tabor & Godfrey Aves., Philadelphia, Pa.

WORCESTER, CITY OF, DEPARTMENT OF PUBLIC BUILDINGS, Willard Hedlund, Supt. of Public Buildings, City Hall, Worcester, Mass.

WYMAN, E. L., Vice-President, Clayton Mark and Co., Room 3518, 20 N. Wacker Drive, Chicago, Ill.

Junior Members (6)

BLANK, C. A., Civil Engineer, The Caribbean Petroleum Co., La Guayra, Venezuela.

BRITTON, L. A., Assistant Chemist, The Caribbean Petroleum Co., Maracaibo, Venezuela.

MARQUARDT, E. G., JR., Testing Laboratory Assistant, City Testing Laboratory, 1544 E. Broad St., Columbus, Ohio.

NORTHROP, J. L., Chemical Engineer, Chamberlain Corp., Waterloo, Iowa.

PRIESTLEY, S. A. G., Technical Laboratory Assistant, The Shell Co. of Australia, Ltd., Sydney, N. S. W., Australia. For mail: The Grove, Roseville, N. S. W., Australia.

SVIRSKY, HENRY, Chemist, Robert Kann, Inc., New York City. For mail: 50 Garden Place, Brooklyn, N. Y.

